
Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions

*Produits isolants thermiques destinés aux applications du bâtiment —
Détermination de la stabilité dimensionnelle dans des conditions de
température et d'humidité spécifiées*

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ISO 29472:2008

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 29472 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 1, *Test and measurement methods*.

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Introduction

This International Standard comprises the original EN 1604:1996 and EN 1604:1996/AC:1997 prepared by Technical Committee CEN/TC 88, *Thermal insulating materials and products*, which have been amended by ISO/TC 163/SC 1 with reference to conditioning and testing conditions in tropical countries.

This International Standard is one of a series of documents specifying test methods, based on existing European Standards, that are being adopted by ISO. This “package” of standards includes the following group of interrelated documents.

International Standard	Respective EN standard
ISO 29465, <i>Thermal insulating products for building applications — Determination of length and width</i>	EN 822
ISO 29466, <i>Thermal insulating products for building applications — Determination of thickness</i>	EN 823
ISO 29467, <i>Thermal insulating products for building applications — Determination of squareness</i>	EN 824
ISO 29468, <i>Thermal insulating products for building applications — Determination of flatness</i>	EN 825
ISO 29469, <i>Thermal insulating products for building applications — Determination of compression behaviour</i>	EN 826
ISO 29470, <i>Thermal insulating products for building applications — Determination of the apparent density</i>	EN 1602
ISO 29471, <i>Thermal insulating products for building applications — Determination of dimensional stability under constant normal laboratory conditions (23°C/50 % relative humidity)</i>	EN 1603
ISO 29472, <i>Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions</i>	EN 1604
ISO 29764, <i>Thermal insulating products for building applications — Determination of deformation under specified compressive load and temperature conditions</i>	EN 1605
ISO 29765, <i>Thermal insulating products for building applications — Determination of tensile strength perpendicular to faces</i>	EN 1607
ISO 29766, <i>Thermal insulating products for building applications — Determination of tensile strength parallel to faces</i>	EN 1608
ISO 29767, <i>Thermal insulating products for building applications — Determination of short-term water absorption by partial immersion</i>	EN 1609
ISO 29768, <i>Thermal insulating products for building applications — Determination of linear dimensions of test specimens</i>	EN 12085

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ISO 29769, <i>Thermal insulating products for building applications — Determination of behaviour under point load</i>	EN 12430
ISO 29770, <i>Thermal insulating products for building applications — Determination of thickness for floating-floor insulating products</i>	EN 12431
ISO 29771, <i>Thermal insulating materials for building applications — Determination of organic content</i>	EN 13820
ISO 29803, <i>Thermal insulation products for building applications — Determination of the resistance to impact of external thermal insulation composite systems (ETICS)</i>	EN 13497
ISO 29804, <i>Thermal insulation products for building applications — Determination of the tensile bond strength of the adhesive and of the base coat to the thermal insulation material</i>	EN 13494
ISO 29805, <i>Thermal insulation products for building applications — Determination of the mechanical properties of glass fibre meshes</i>	EN 13496

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Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions

1 Scope

This International Standard specifies the equipment and procedures for evaluating dimensional changes of specimens under specified conditions of temperature, relative humidity and duration of exposure. This International Standard proposes a range of conditions from which one or more desirable test conditions can be selected. This International Standard is applicable to thermal insulating products.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 29768, *Thermal insulating products for building applications — Determination of linear dimensions of test specimens*

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ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

length

l

dimension of the specimen parallel to the longer linear dimension of the major surface of the original product

3.2

width

b

linear dimension of the major surface of the specimen, measured at right angles to the length

3.3

thickness

d

linear dimension measured perpendicularly to the length and width plane

4 Principle

A determination is made of the changes in linear dimensions that occur when the specimens are conditioned, subjected to specified environments for a given period, and then reconditioned.

5 Apparatus

5.1 Temperature-controlled or temperature- and humidity-controlled chamber, capable of maintaining the specimens within the specified conditions and within the limits specified in 7.2.

5.2 Measuring instruments, capable of measuring linear dimensions of specimens in accordance with ISO 29768, to an accuracy of 0,1 mm.

6 Test specimens

6.1 Dimensions of test specimens

The thickness of specimens shall be equal to the original product thickness.

The specimens shall be squarely cut and have a side length of (200 ± 1) mm. If larger dimensions are used, the accuracy shall be as given in 5.2.

6.2 Number of test specimens

The number of specimens shall be as specified in the relevant product standard. If the number is not specified, then at least three specimens shall be tested for each set of chosen conditions. In the absence of a product standard or any other international or European technical specification, the number of specimens may be agreed between parties.

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6.3 Preparation of test specimens (standards.iteh.ai)

The specimens shall be cut so that they are representative of the full size product. Any surface skins, facings and/or coatings shall be retained. Length and width directions shall be marked on the specimens.

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6.4 Conditioning of test specimens

The specimens shall be conditioned to equilibrium with an atmosphere at (23 ± 2) °C and (50 ± 5) % relative humidity. A specimen is considered to be conditioned when changes in length and in width, measured according to 7.2, between two consecutive measurements at a time interval of two weeks, are less than 0,1 %.

Other time intervals may be defined in the relevant product standard or any other international or European technical specification.

In tropical countries, different conditioning and testing conditions can be relevant. In this case, the conditions shall be 27 °C and 65 % RH and be stated clearly in the test report.

7 Procedure

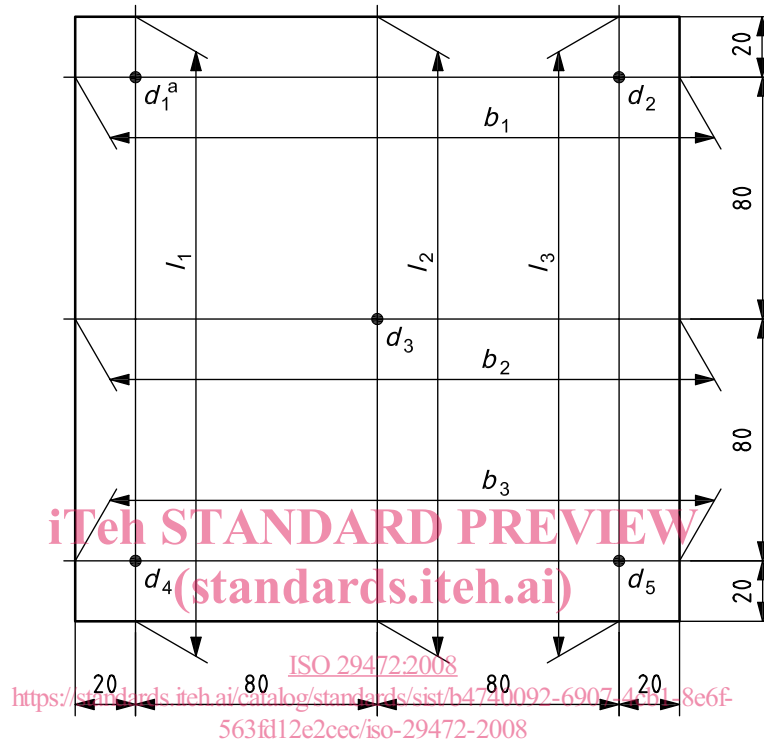
7.1 Test conditions

Condition the specimens in accordance with 6.4.

7.2 Test procedure

7.2.1 In the same atmosphere as used for conditioning, determine the initial length and width of each specimen (l_0 and b_0 , respectively) by taking readings at three positions (l_{01} , l_{02} , l_{03} and b_{01} , b_{02} , b_{03} , respectively) and the initial thickness (d_0) at five positions (d_{01} , d_{02} , d_{03} , d_{04} , d_{05}) as shown in Figure 1, using the appropriate methods described in ISO 29768, to an accuracy of 0,1 mm.

Dimensions in millimetres



^a The subscript indicates the number of the reading, e.g., d_1 stands for d_{01} and d_{t1} .

Figure 1 — Positions for measuring dimensions

7.2.2 Expose a set of specimens to each of the conditions specified in the relevant product standard.

7.2.3 In the absence of such a specification, test conditions may be agreed between parties, chosen from 7.2.3.1 and 7.2.3.2. Other conditions may be used.

7.2.3.1 For a specified temperature without a specified relative humidity:

- $(-40 \pm 3) ^\circ\text{C}$;
- $(-30 \pm 3) ^\circ\text{C}$;
- $(+40 \pm 2) ^\circ\text{C}$;
- $(+60 \pm 2) ^\circ\text{C}$.